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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/867,773	05/29/2001	Rolf Steiger	ICH 292	7734

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EXAMINER

SHEWAREGED, BETELHEM

ART UNIT	PAPER NUMBER
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1774

DATE MAILED: 07/07/2003

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Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/867,773

Applicant(s)

STEIGER ET AL.

Examiner

Betelhem Shewareged

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 07 April 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1 and 3-22 is/are pending in the application.
- 4a) Of the above claim(s) 19 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1, 3-18 and 20-22 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____
- 4) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other:

DETAILED ACTION

1. Applicant's response filed on 04/07/2003 has been fully considered. The 35 U.S.C. 112 rejection, and the 35 U.S.C 102 rejection anticipated by Kohno, Schliesman and Okumura have been withdrawn in view of Applicant's amendments and comments.
2. Claim 2 is cancelled, claims 1, 4, 13 and 17 are amended, claims 20-22 are added, and thus claims 1 and 3-22 are pending. (NOTE: Claim 19 is still withdrawn from consideration as a non-elected invention).

Claim Rejections - 35 USC § 102

3. Claims 1, 3, 4, 9-16 and 18 are rejected under 35 U.S.C. 102(e) as being anticipated by Mishima (US 6,183,851).

Mishima discloses an ink jet recording medium comprising at least one coating layer provided on a support (col. 2, line 32). The outer layer of the at least one coating layer (hereinafter the coating layer) comprises inorganic pigments of alumina, silica and/or mullite [equivalent to the claimed aluminum silicate] (col. 8, lines 24-33). The silica may be spherical and porous (col. 8, line 36 and 45). The silica has an average particle diameter of 4-120 milli-micrometer or 4-120 nm (col. 8, line 42), and has a pore volume of 0.5-3 cc/g (col. 8, line 49). Since Mishima is silent as to what percentage of the silica has the above pore volume the examiner interprets that 100% of the silica has the above pore volume. The alumina can be γ -alumina or δ -alumina, and has an average particle diameter of 4-300 milli-micrometer or 4-300 nm (col. 8, line 61). The alumina can be porous, and has a pore volume of 0.3-3 cc/g (col. 8, line 67). Since

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Mishima is silent as to what percentage of the alumina has the above pore volume the examiner interprets that 100% of the alumina has the above pore volume. A binder such as gelatin, polyvinyl alcohol or polyvinyl pyrrolidone (col. 9, line 63) is contained in the coating layer (col. 11, line 48). The coating layer further comprises silicone dioxide and aluminum oxide as a matting agent (col. 13, line 25). The examiner interprets the silica as positively charged silica because the coating layer contains cationic surface active agents (col. 15, line 62) which would positively charge the silica.

As to the limitations of the diameters of the primary particles having the largest volume and the smallest volume, the diameter for the particles having the smallest volume is equal to the diameter of the particles having the largest volume when the given ratio is 20/20. (NOTE: At least 1/20 includes 20/20, therefore, 20/20 * "less than 20nm" = "less than 20nm").

As to the claimed diameters of the primary particles having the largest volume and the smallest volume in claim 4, the diameter for the particles having the smallest volume is equal to the diameter of the particles having the largest volume when the given ratio is 10/10. (NOTE: At least 1/10 includes 10/10, therefore, 10/10 * "less than 15nm" = "less than 15nm").

Response to Arguments

4. Applicant's argument is based on that Mishima fails to disclose the diameters of the primary particles having the largest volume and the smallest volume as recited in claims 1 and 4. Applicant further argued that the Examiner's calculation is not accurate.

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Applicant also indicated that Mishima's particle diameter having the smallest volume is 4 nm, which is larger than 1 nm, regarding the limitation disclosed in claim 1. Applicant further indicated that Mishima's particle diameter having the smallest volume is 4 nm, which is larger than 1.5 nm, regarding the limitation disclosed in claim 4. Applicant's arguments have not been found persuasive for the following reasons. The claimed particle diameters having the largest volume are less than 20 nm and less than 15 nm. Both "less than 20 nm" and "less than 15 nm" are included in the range disclosed by Mishima (see col. 8, lines 42 and 61). The claimed particle diameters having the smallest volume are **at least** 1/20 and **at least** 1/10 of the particle diameters having the largest volume of less than 20 nm and less than 15 nm, respectively. At least 1/20 includes 1/20, 2/20, 3/20, ..., 20/20, and at least 1/10 includes 1/10, 2/10, 3/10, ..., 10/10. When the "at least 1/20" and the "at least 1/10" are 20/20 and 10/10, respectively, the particle diameter having the largest volume and the particle diameter having the smallest volume are equal, (e.g., $20/20 * \text{"less than 20 nm"} = \text{"less than 20 nm"}$, or $10/10 * \text{"less than 15 nm"} = \text{"less than 15 nm"}$). Therefore, as Applicant indicated even though Mishima's 4 nm is larger than 1 nm and 1.5 nm, it is still less than 20 nm and 15 nm. For the above reasons and since Applicant's particle diameters having the smallest volume are not limited to 1 nm and/or 1.5 nm, claims 1, 3, 4, 9-16 and 18 stand rejected.

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. Claims 5-8, 17 and 20-22 are rejected under 35 U.S.C. 103(a) as being unpatentable over Mishima (US 6,183,851) in view of Brugger et al. (US 6,156,419).

Mishima discloses an ink jet recording medium comprising at least one coating layer provided on a support (col. 2, line 32). The outer layer of the at least one coating layer (hereinafter the coating layer) comprises inorganic pigments of alumina, silica and/or mullite [equivalent to the claimed aluminum silicate] (col. 8, lines 24-33). The silica may be spherical and porous (col. 8, line 36 and 45). The silica has an average particle diameter of 4-120 milli-micrometer or 4-120 nm (col. 8, line 42), and has a pore volume of 0.5-3 cc/g (col. 8, line 49). Since Mishima is silent as to what percentage of the silica has the above pore volume the examiner interprets that 100% of the silica has the above pore volume. The alumina can be γ -alumina or δ -alumina, and has an average particle diameter of 4-300 milli-micrometer or 4-300 nm (col. 8, line 61). The alumina can be porous, and has a pore volume of 0.3-3 cc/g (col. 8, line 67). Since Mishima is silent as to what percentage of the alumina has the above pore volume the examiner interprets that 100% of the alumina has the above pore volume. As to the limitations of the diameters of the primary particles having the largest volume and the smallest volume, the diameter for the particles having the smallest volume is equal to

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the diameter of the particles having the largest volume when the given ratio is 20/20.

(NOTE: At least 1/20 includes 20/20, therefore, 20/20 * "less than 20nm" = "less than 20nm"). Mishima fails to disclose an aluminum oxide/hydroxide containing one or more of the elements with atomic number 57-71 in a total amount of 0.04 to 4.2 mole percent relative to Al_2O_3 .

Brugger teaches an ink jet recording layer consisting of a support and at least one ink receiving layer on the support, wherein the ink receiving layer comprises porous aluminum oxide/hydroxide containing at least one element of the rare earth metal series of the periodic table system of the elements with atomic numbers 57-71 in a total amount of 0.04 to 4.2 mole percent relative to Al_2O_3 (abstract and col. 3, line 30).

Mishima and Brugger are analogous art because they are from the same field of endeavor that is the ink jet recording art. At the time of the invention, it would have been obvious to a person of ordinary skill in the art combine the aluminum oxide/hydroxide of Brugger with the invention of Mishima in order to provide an ink jet recording medium having high ink absorptiveness, high ink absorption rate and excellent image quality (see col. 2, lines 50-67 of Brugger).

With respect to claims 5-8, Mishima does not disclose the different possible shapes of the particles. The experimental modification of this prior art in order to ascertain optimum operating conditions fails to render applicants' claims patentable in the absence of unexpected results. *In re Aller*, 105 USPQ 233. One of ordinary skill in the art would have been motivated to adjust the shape of the particles in order to optimize the transparency of the ink jet recording medium. A prima facie case of

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obviousness may be rebutted, however, where the results of the optimizing variable, which is known to be result-effective, are unexpectedly good. *In re Boesch and Slaney*, 205 USPQ 215.

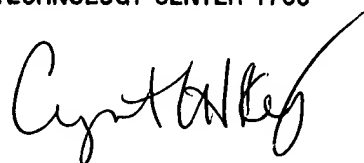
Conclusion

7. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Betelhem Shewareged whose telephone number is 703-305-0389. The examiner can normally be reached on Mon.-Thur. 7:30AM-6:00PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Cynthia H Kelly can be reached on 703-308-0449. The fax phone numbers for the organization where this application or proceeding is assigned are 703-305-5408 for regular communications and 703-305-3599 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0651.

CYNTHIA H. KELLY
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 1700



BS B.S.
June 30, 2003.